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ABSTRACT

This digest discusses hearing loss in children. Topics covered include: (1) the causes of hearing loss and the three major types of hearing losses, conductive loss, sensorineural loss, and central auditory processing disorder; (2) the federal definitions of "deaf" (hearing loss which adversely affects educational performance and which is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification), "hard of hearing" (hearing loss that adversely affects a child's educational performance but which allows the child access to some degree of communication with or without amplification), and "Deaf" with a capital "D" (refers to those individuals with hearing losses who identify themselves with the Deaf Culture); (3) the incidence of hearing loss; (4) the signs of hearing loss, including attention problems, lack of vocal interactions or reduced vocal interactions, frustration with school and others, or low grades or a drop in grades; (5) different communication strategies of children with hearing loss, including the auditory-oral philosophy, cued speech, English-based sign systems, the bilingual-bicultural philosophy, total communication, and cochlear implants; (6) the different education settings for children with hearing impairments; and (7) the different types of technology available for people with hearing impairments. Contains 10 references. (CR)

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Educating Children Who Are Deaf or Hard of Hearing: Overview

Susan Easterbrooks

When a child has a hearing loss during the developmental years, all areas of development can be affected significantly. A hearing loss limits ease of acquisition of a communication system, which further influences development of interactions with others, the ability to make sense out of the world, and ease of acquiring academic skills. Early identification of a hearing loss is critical to a child's academic and emotional adjustment.

What is a hearing loss, and how is it caused?

There are three major types of hearing losses. The first is called a conductive loss. This occurs when something goes wrong with the outer or middle ear, impeding sound waves from being conducted or carried to the inner ear. The second type of loss is called a sensorineural loss and occurs when damage to the inner ear or the auditory nerve impedes the sound message from being sent to the brain. The third type is referred to as a central auditory processing disorder because, although there is no specific damage to the ear itself, the neural system involved in understanding what is heard is impaired. Children with central auditory processing disorder may have normal hearing as measured by an audiometer (device used to test hearing levels), but they often have difficulty understanding what they hear. A child may also have a combination of these forms of hearing loss (Easterbrooks & Baker-Hawkins, 1994).

Many terms are used to refer to the population of individuals who have difficulty hearing. The word "deaf" by federal definition means a hearing loss which adversely affects educational performance and which is so severe that the child is impaired in processing linguistic (communication) information through hearing, with or without amplification (hearing aids). The term "hard of hearing" means a hearing loss, whether permanent or fluctuating, that adversely affects a child's educational performance but which allows the child access to some degree of communication with or without amplification (Individuals with Disabilities Education Act, 1990). The term "Deaf" used with a capital D refers to those individuals with hearing losses who identify themselves with the Deaf Culture. These individuals view themselves as a population united by a common heritage, a shared experience, a multi-generational history, and a language, American Sign Language (ASL) (Padden & Humphries, 1988).

The term "hearing-impaired" is used inconsistently around the country today. Some use it to mean all degrees of hearing loss while others use it to refer to the hard-of-hearing population. The terms "deaf mute" and "deaf and dumb" are antiquated. Not only are they seen as outdated, they are also viewed as offensive.

How many people have hearing losses?

The National Center for Health Statistics (Adams & Benson, 1992) estimated that more than 22.5 million Americans have some degree of hearing loss. Of these individuals, 1,053,000 were under 18 years of age. This means that one of every six children has diminished hearing to some degree at any given point in time (Berg, 1986). Schildroth and Hotto (1994) reported results of demographic information on 48,300 children identified as having hearing losses. The students in their research represented 60-65% of the number reported by the federal Office of Special Education Programs (OSEP), U.S. Department of Education. The vast number of individuals with hearing losses are hard of hearing or are older adults who have lost their hearing.

What are the signs of a hearing loss, and how is it diagnosed?

In very young children the signs of a hearing loss are lack of attention or *inconsistent* attention, lack of vocal interactions or reduced vocal interactions, and lack of or reduction in language development, especially related to the quiet word endings such as -ed, -ing, and -s. In school-aged children, the signs of a hearing loss are a high degree of frustration with school and with others, low grades or a noticeable drop in grades, or a change in patterns of paying attention (Davis, 1989). In adults, the signs of a hearing loss are complaints that others are mumbling or playing equipment such as the TV or radio too loudly.

How do people with hearing losses communicate?

The debate over the best way to teach a child with a hearing loss to communicate has raged since the 1500s (Winefield, 1987). Although this debate continues today, there is a growing number of individuals who recognize that no one system of communication is right for all children. The choice of a communication system must be made on an individual basis, taking into consideration the characteristics of the child, the resources available, and the commitment of an individual family to a communication method. Additional ERIC digests explore each of these options in depth. As an orientation, the following definitions are useful:

The Auditory-Verbal philosophy is a set of guiding principles for early intervention that are used to support the development of residual (remaining) hearing and speech and that focus on a strong development of listening skills (see ERIC Digest E552). The Auditory-Oral philosophy is a set of principles that are used to develop spoken language and listening skills at all ages and that may incorporate visual methods of teaching these (see ERIC Digest E551). Cued Speech is a sound-based system of hand cues that supplement speechreading. English-Based Sign Systems are those systems that use signs from ASL plus invented signs along with prefixes and suffixes to represent the English language in signed form. The Bilingual-Bicultural philosophy stresses the importance of early development of ASL, which has a grammar different from spoken or signed English, as the deaf child's natural language, using ASL as a bridge into English as a

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second language. Total Communication (see ERIC Digest E559) refers to a philosophy of using the system most needed by the child at any given time. Total Communication usually involves simultaneous use of speech and sign and is the most commonly used form of instruction (Schildroth & Hotto, 1993).

Other factors complicate the picture of which system should be used to teach children who are deaf and hard of hearing to communicate. Cochlear implants are computerized devices implanted into the cochlea of individuals who are deaf, which influence the ability to develop speech and listening skills (see Digest E554). They are supported by the various oral philosophies. Attendance at a residential school (see ERIC Digest E558) is considered a key component in the success of a child whose family has chosen the Bilingual-Bicultural approach to education. The presence of additional learning disorders (see ERIC Digest E553) may also affect a child's progress in any method or philosophy; therefore, this challenging-to-test population must be assessed adequately (see ERIC Digest E550).

Where are children who are deaf or hard of hearing educated?

According to the annual report of the Center for Assessment and Demographic Studies (CADS) at Gallaudet University (Schildroth & Hotto, 1996), 21% of the students in the study attended residential schools, 8% attended day schools, and 70% attended their local schools. These figures represent about 60-65% of the children reported on the federal child count, and the assumption is often made that the additional students not in the CADS study are being educated in local education agencies that are unaware that they may participate in the CADS process. Whatever the reason, over the past two decades, more and more children who are deaf or hard of hearing are receiving instruction in general education environments (see ERIC Digest E557).

What kind of technology is available for people who are deaf or hard of hearing?

Today the options for support from technology are exciting. A wide variety of hearing aids can be tailored to individual patterns of loss. Students in classrooms may use a variety of assistive listening devices that help them hear the teacher while filtering out ambient noise. Telecommunication Devices for the Deaf (TDDs) are available to provide people who are deaf with access to telephones (Compton, 1991). Many states have relay services that work in conjunction with TDDs. Television sets are now produced with built-in closed captioning capabilities, or for older TVs, viewers may purchase captioners. A variety of alerting devices are available which use visual means to alert individuals to doorbells, telephones, a knock at the door, a baby's crying, oven timers, and smoke detectors, among other sounds of daily life. Vibrating devices may be used in place of an alarm clock. In addition, computer technology such as fax machines, programs for teaching speech, real-time graphic display devices for recording lectures, and a myriad of machines and programs are affecting education and daily life to an ever-increasing degree.

References and Additional Resources

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Winefield, R. (1987). *Never the twain shall meet*. Washington, DC: Gallaudet University Press.

Many organizations promote the understanding and use of the philosophies and technologies mentioned above, including:

Alexander Graham Bell Association for the Deaf
American Society for Deaf Children
Committee on Persons Who are Deaf/Hard of Hearing
(Committee of the Division of for Children with Communication Disorders [DCCD] of the Council for Exceptional Children [CEC])
Convention of American Instructors of the Deaf
Conference of Educational Administrators Serving the Deaf
National Association of the Deaf
National Cued Speech Association
SEE Center for the Advancement of Deaf Children

A more comprehensive listing of these agencies can be found annually in each April edition of the *American Annals of the Deaf*.

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